

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-21 (Canceled).

Claim 22 (Currently Amended): A method for cleaning a surface of a conductive layer on a semiconductor substrate placed in a reaction chamber,  
wherein plasma containing hydrogen, helium and argon is generated in the reaction chamber, and the surface of the conductive layer is cleaned by being reduced therewith, and wherein a residual organic material on the surface of the conductive layer is ashed by the plasma while the surface of the conductive layer is reduced.

Claim 23 (Canceled).

Claim 24 (Previously Presented): The method of claim 22, wherein an insulating layer is formed on the surface of the conductive layer, a via hole for exposing a part of the conductive layer is formed in the insulating layer, and the surface of the conductive layer exposed through a bottom portion of the via hole is cleaned by the plasma.

Claim 25 (Previously Presented): The method of claim 24, wherein an upper insulating film is further formed on the insulating layer, and a wiring trench for exposing the via hole is formed in the upper insulating film, the exposed surface of the conductive layer being cleaned by the plasma after the upper insulating film has been formed.

Claim 26 (Previously Presented): The method of claim 22, wherein a density of the plasma is  $10^{10}$  to  $10^{13}/\text{cm}^3$ .

Claim 27 (Previously Presented): The method of claim 22, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 28 (Previously Presented): The method of claim 26, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 29 (Previously Presented): The method of claim 26, wherein the plasma is generated by using a planar antenna.

Claim 30 (Previously Presented): The method of claim 26, wherein the plasma is inductively coupled plasma or magnetron plasma.

Claim 31 (Previously Presented): The method of claim 29, wherein the high density plasma processing is performed by forming a uniform electric field in the reaction chamber, the high density plasma being generated using microwave.

Claims 32-34 (Canceled).

Claim 35 (Previously Presented): The method of claim 22, wherein the plasma processing is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and flow ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 36 (Currently Amended): The method of claim [[23]] 22, wherein the plasma processing is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and flow ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 37 (Currently Amended): A computer-readable storage medium storing software for performing a cleaning method for cleaning a surface of a conductive layer on a semiconductor substrate in a reaction chamber, the software when executed by a computer cause the computer to perform the cleaning method comprising:

generating plasma containing hydrogen, helium and argon in the reaction chamber;

and

cleaning the surface of the conductive layer by reducing the surface of the conductive layer,

wherein a residual organic material on the surface of the conductive layer is ashed by the plasma while the surface of the conductive layer is reduced.

Claim 38 (Canceled).

Claim 39 (Previously Presented): The computer-readable storage medium of claim 37, wherein an insulating layer is formed on the substrate of the conductive layer, a via hole for exposing a part of the conductive layer is formed in the insulating layer, and the surface of the conductive layer exposed through a bottom portion of the via hole is cleaned using the plasma.

Claim 40 (Previously Presented): The computer-readable storage medium of claim 39, wherein an upper insulating film is further deposited on the insulating layer, and a wiring

trench for exposing the via hole is formed in the upper insulating film, the exposed surface of the conductive layer being cleaned using the plasma after the upper insulating film has been formed.

Claim 41 (Previously Presented): The computer-readable storage medium of claim 37, wherein the cleaning is performed by a high density plasma processing at a low electron temperature, and the generating plasma is performed by forming a uniform electric field in the reaction chamber, a high density plasma being generated using microwave.

Claim 42 (Currently Amended): The computer-readable storage medium of claim [[38]] 37, wherein the generating plasma is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.